

UNIT NO: RECTIFIER No. 4 WELL No. 5 CITY: COUNCIL GROVE

DATE: 4/16/97

STATE: KANSAS

COUNTY: MORRIS

DISTRICT: KANSAS

TRACTOR: McLEAN'S C.P.

INSPECTOR: TERRY HILLIARD

AFE: # 212895001

APPROPRIATION: # 8301586

LOCATION: T.B.S. - JEFFERSON + HAYS STS. K.C.C. API# 15-127-205630000

GROUND BED: DEPTH- 250 Ft. Dia.- 8 In. ANODES: 8 - ANOTEC 3884

(No., Type, & Mfg.)

CASING: SIZE- 8 In. DEPTH- 80 Ft. COKE BREEZE: LORESCO SC-3/ 3400 LBS. SCHEDULE 40 PVC (Amount & Mfg.)

ASTM F480-94 WELL CASING CASING CENTRALIZER SPACING: 78' 60' 40' 20'

TO DEPTH - 4/17/97 COMPLETED - 4/19/97

BATTERY VOLTS - 12.8

| DEPTH FT. | DRILLER' LOG | RESISTIVITY OHMS | AMPS | ANODE NO. | DEPTH TO ANODE | AMPS BEFORE COKE | AMPS AFTER COKE |
|-----------|----------------------------------------|----------------------|------|--------------|----------------------------------------------------------------|------------------------------------|-----------------|
| 5 | TAN CLAY | ↑ | | ↑ | | 8" PVC CAP | |
| 10 | TAN CLAY | | | | | 3' BELOW GROUND LEVEL | |
| 15 | TAN + BLUE CLAY | 8" PVC CASING IN 14" | | | | | |
| 20 | " " " " SOME ROCK CHIPS | | | | | | |
| 25 | TAN, BLUE + GRAY ROCK | BOREHOLE CEMENTED | | | | CEMENT WEIGHT 15.5 LBS. PER GALLON | |
| 30 | BLACK SHALE + ROCK | | | | | | |
| 35 | BLACK + TAN " " " | IN. | | | HOLE PUMPED WITH NEAT CEMENT FROM TOP OF COKE TO TOP OF CASING | | |
| 40 | BLACK + TAN ROCK | 37-94* | | 1" PVC SOLID | | | |
| 45 | DARK GRAY ROCK + BLUE CLAY | BAGS | | | | | |
| 50 | " " + TAN ROCK " " " | | | | | | |
| 55 | GRAY + TAN SHALE + ROCK | | | | | | |
| 60 | DARK GRAY + TAN ROCK + SHALE | | | | | | |
| 65 | GRAY + DARK GRAY SHALE | | | | | | |
| 70 | GRAY SHALE - SOME GRAY CLAY | | | | | | |
| 75 | GRAY + BLUE SHALE - TAN ROCK | CHLORIDE 400 PPM | | | | | |
| 80 | " " " " " " | ↓ | | | | | |
| 85 | GRAY SHALE, Rock - WHITE ROCK | | | | | | |
| 90 | " " " " " " | | | | | | |
| 95 | " " " " " " | | | | | | |
| 100 | GRAY SHALE, Rock - SOME GRAY CLAY | | | * | | 100 - 2.1 | |
| 105 | " " " " " " | | | | | | |
| 110 | " " " " " " | 500 OHMS | | | TOP OF COKE | 110 - 5.2 | |
| 115 | " " " " - MORE " " | | | | | | |
| 120 | " " " " - SOME GRAY CLAY | | | | | 120 - 6.3 | |
| 125 | " " " " - " " " | | | | | | |
| 130 | GRAY + REDDISH BROWN CLAY - GRAY SHALE | | | 140° 1" PVC | | 130 - 7.2 | |
| 135 | " " " " " " | | | ALL VENT | | | |
| 140 | " " " " " " | | | | | 140 - 6.9 | |
| 145 | " " " " " " | | | 8 | * 146' | | 10.4 |
| 150 | BLUE GRAY SHALE - REDDISH BROWN CLAY | | | | | 150 - 5.3 | |
| 155 | GRAY SHALE - SOME GRAY CLAY | 360 OHMS | | | | | |
| 160 | " " " " " " | | | 7 | * 158' | 160 - 5.1 | 8.2 |
| 165 | " " " " " " | CHLORIDE 1500 PPM | | | | | |
| 170 | DARK GRAY SHALE + CLAY | | | 6 | * 170' | 170 - 6.0 | 10.2 |
| 175 | " " " " " " | | | | | | |
| 180 | " " " " " " | | | | | 180 - 4.2 | |
| 185 | " " " " " " | 400 OHMS | | 5 | * 182' | | 7.6 |
| 190 | GRAY CLAY - SOME GRAY SHALE | | | | | 190 - 7.1 | |
| 195 | " " " " " " | | | 4 | * 194' | | 10.1 |
| 200 | " " " " " " | | | | | 200 - 6.5 | |
| 205 | " " " " " " | | | 3 | * 206' | | 8.4 |
| 210 | " " " " " " | | | | | 210 - 3.2 | |
| 215 | GRAY CLAY + WHITE CLAY - LITTLE SHALE | | | 2 | * 218' | | 6.1 |
| 220 | " " " " " " | | | | | 220 - 5.6 | |
| 225 | GRAY CLAY - SOME SHALE | | | | | | |
| 230 | " " " " " " | 260 OHMS | | 1 | * 230' | 230 - 7.0 | 11.1 |
| 235 | " " " " " " | | | | | | |
| 240 | " " " " " " | | | | | | |
| 245 | " " " " " " | CHLORIDE 2000 PPM | | * | 1" PVC | | |
| 250 | " " " " " " | | | ↓ | SOLID | | |

BOREHOLE IS 161' S. of HAYS ST. 39' E. of JEFFERSON ST.